KERR-McGEE
800 WEYRAUCH STREET • WEST CHICAGO, ILLINOIS 60185

October 4, 2001
FLKE-002

PHONE
630-293-6330

VIA FIRST CLASS MAIL

TO: Mr. Fred Micke
Acting On-Scene Coordinator
Illinois/Indiana Remedial Response Branch
U.S. EPA, Region 5
77 W. Jackson Blvd. (SE-5J)
Chicago, Illinois 60604-3590

SUBJECT: Investigation Work Plan

REFERENCE: DuSable Park, Chicago, IL

Dear Mr. Micke:

In response to Ms. Fulghum's letter of August 31, 2001, Kerr-McGee Chemical LLC has prepared an Investigation Work Plan for a limited site investigation at the DuSable Park Site in Chicago, IL.

Please call me at (630) 293-6374 if you have any questions.

Very truly yours,

KERR-McGEE CHEMICAL LLC

Bernard Bono

Bernard Bono
Senior Engineer

Attachments

cc: Mary L. Fulghum, Esq. (USEPA)

File: DPCH – EPA

INVESTIGATION WORK PLAN

DUSABLE PARK SITE

CHICAGO, ILLINOIS

KERR-MCGEE CHEMICAL LLC

October 4, 2001

SCOPE AND OBJECTIVES

This Investigation Work Plan provides an overview of work that will be done to determine whether the three anomalies located by the U.S. EPA represent buried thorium residuals or surface concentration anomalies. The work will be performed at the DuSable Park Site (Site) located in Chicago, Illinois. The location of the Site is shown on Figure 1. The Site is currently a vacant parcel heavily overgrown with tall weeds and scrub trees.

Kerr-McGee Chemical LLC (Kerr-McGee) is performing this investigation. Kerr-McGee, through its own personnel and qualified contractors, will investigate three specific areas of the Site, previously identified by the U.S. EPA as having surface gamma readings above background levels. These three areas are shown on Figure 2.

The Investigation Work Plan describes the work to be performed, health and safety issues, and includes the procedures to be used. The procedures that will be used include surface gamma surveying and downhole gamma logging.

The three investigation areas will be located in the field using a Trimble Pro-XR global positioning system (GPS) unit. These three areas will be surface gamma surveyed to find the surface area with the highest gamma reading. At the point of the highest surface gamma reading in each area, a borehole will be advanced by hand pounding a geoprobe tube down to a depth of two feet. The borehole will then be gamma logged with a calibrated meter to determine if low-level 11(e)(2) byproduct material is present in concentrations exceeding 7.1 pCi/g.

If the gamma logging count rates do not increase with depth, then the surface activity does not represent buried material. If count rates do increase, the hole could be advanced to refusal to determine the thickness and activity of the substrata material exceeding the cleanup criteria. If material exceeding the cleanup criteria is encountered at depth, up to four step out holes may be performed at each location to collect additional information regarding the horizontal extent. Additional investigation beyond the above-described stepouts would change the current scope of this investigation and would require a revision to this Investigation Work Plan.

REPORTING

A report of the investigation results will be submitted to the U.S. EPA. The report will include a map of anomaly areas showing the borehole locations, surface gamma readings, and downhole gamma logs.

ACCESS

The Kerr-McGee Field Investigation Leader will obtain access to the land parcels comprising the Site from the respective property owner (Chicago Park District) prior to beginning investigative activities. This access will include permission for Kerr-McGee or U.S. EPA employees, contractors, agents, consultants, designees, and representatives to conduct actions the U.S. EPA deems necessary. The Environmental Access Agreement form has been included as Figure 3.

UTILITIES

Utilities will be located prior to performing any ground intrusive activity on the property. The Field Investigation Leader will be responsible for originating a request for a DIGGER Utility Locate for each property where drilling is proposed. The phone number for the DIGGER is 1-312-744-7000. DIGGER clearances are valid for fourteen days.

DESCRIPTION OF CREW

Delineation drilling boreholes will be advanced by hand pounding the geoprobe pipe using a heavy weight. The crew typically consists of a driller and a helper to advance the borings. In addition, a Health Physics (HP) technician will be present to perform the GPS survey, surface gamma survey, downhole gamma logging and decontamination tasks. A Kerr-McGee Field Investigation Leader will also be on site to oversee the work.

HEALTH AND SAFETY

The Field Investigation Leader will ensure all work is done in a safe and proper manner. A brief tailgate meeting will be conducted on site before initiating work to explain potential hazards that may be encountered during the work. Potential hazards which could be encountered during investigation activities include contaminated soil materials, contact with mentally disturbed homeless people sleeping in the weeds, hazards associated with lifting and hand-pounding holes, contact with utilities, and contact with wild parsnip.

Constituents of concern that could be encountered during investigation activities include low-level 11(e)(2) byproduct material present in concentrations exceeding the range of natural background. This may include U-238, Th-232 and progeny.

The mechanisms for exposure for these materials are direct exposure, inhalation, ingestion, and eye/skin contact. The primary mechanism for exposure is direct exposure to external gamma radiation. All workers will be instructed in appropriate safety measures to protect against exposure to the above materials.

Homeless people shall be addressed in a courteous and professional manner, however if they become hostile or aggressive, the crew will vacate the work area and call the Chicago Police Department for assistance.

The site is heavily covered with wild parsnip, which can be a strong skin irritant on sunny days. The crew will be instructed to wear long sleeve shirts and gloves at all times they are working in the tall weeds area.

It is anticipated that the investigation work can be done in Modified Level D PPE. Modified Level D PPE for the project includes steel toed or OSHA approved safety work boots or shoes, work gloves, and safety glasses. All visitors must have appropriate PPE and must be accompanied by the Field Investigation Leader.

If monitoring so indicates, PPE requirements will be upgraded to include disposable coveralls, rubber booties and neoprene gloves. Any upgrades in PPE will be at the discretion of the attending HP and will be based on the activity of the material encountered and the task being performed.

All workers and visitors will follow decontamination procedures if they come into contact with low-level 11(e)(2) byproduct material in concentrations exceeding the range of natural background. Workers will frisk before breaks and at the end of the shift.

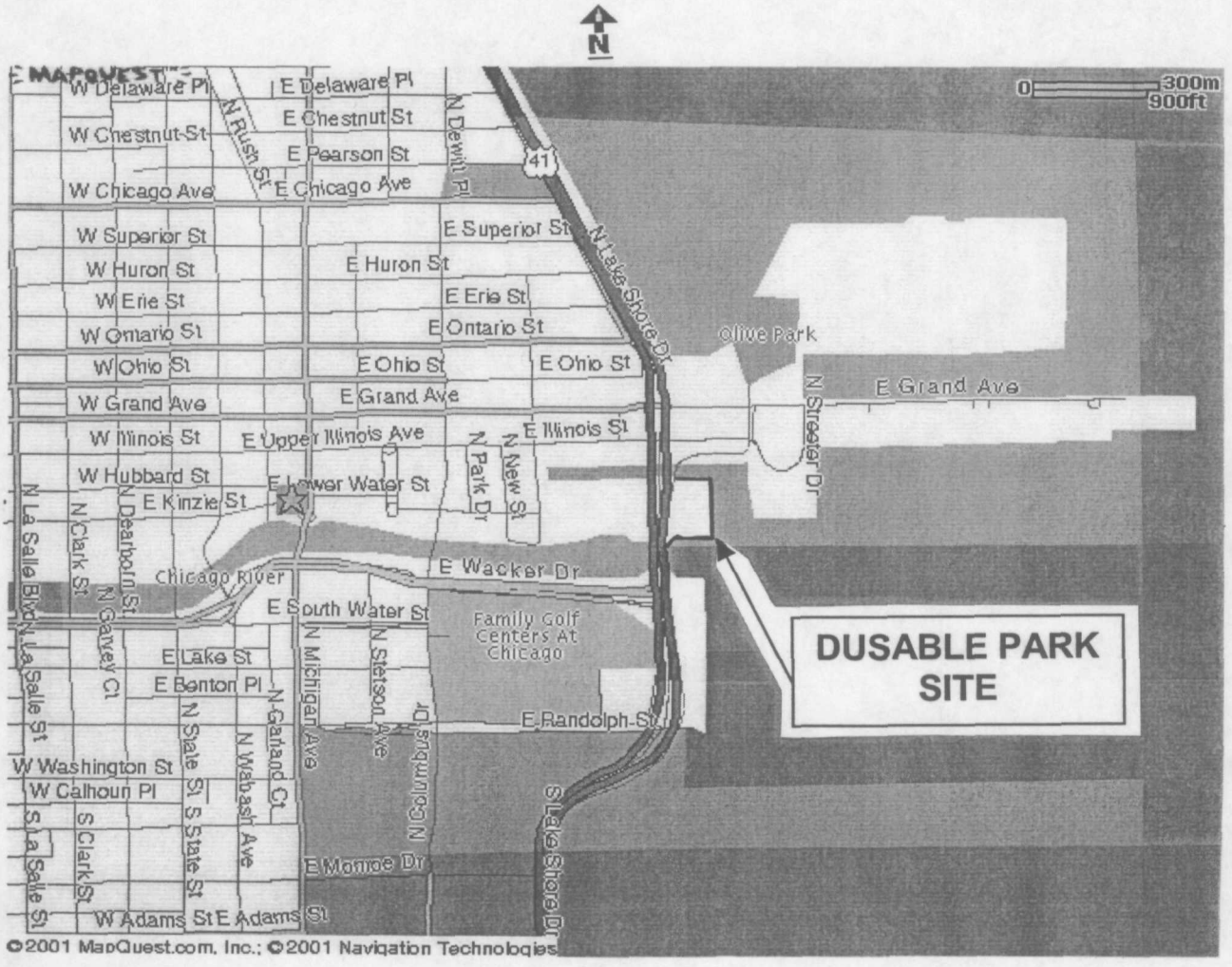

FIGURE 1 – SITE LOCATION MAP

ALCULATION SHEET KM-2056

SHEET

ITLE
DuSable Park Survey - Chicago, IL

DATE

W.O. NO./A.F.E. NO.

PREPARED BY

CHECKED BY

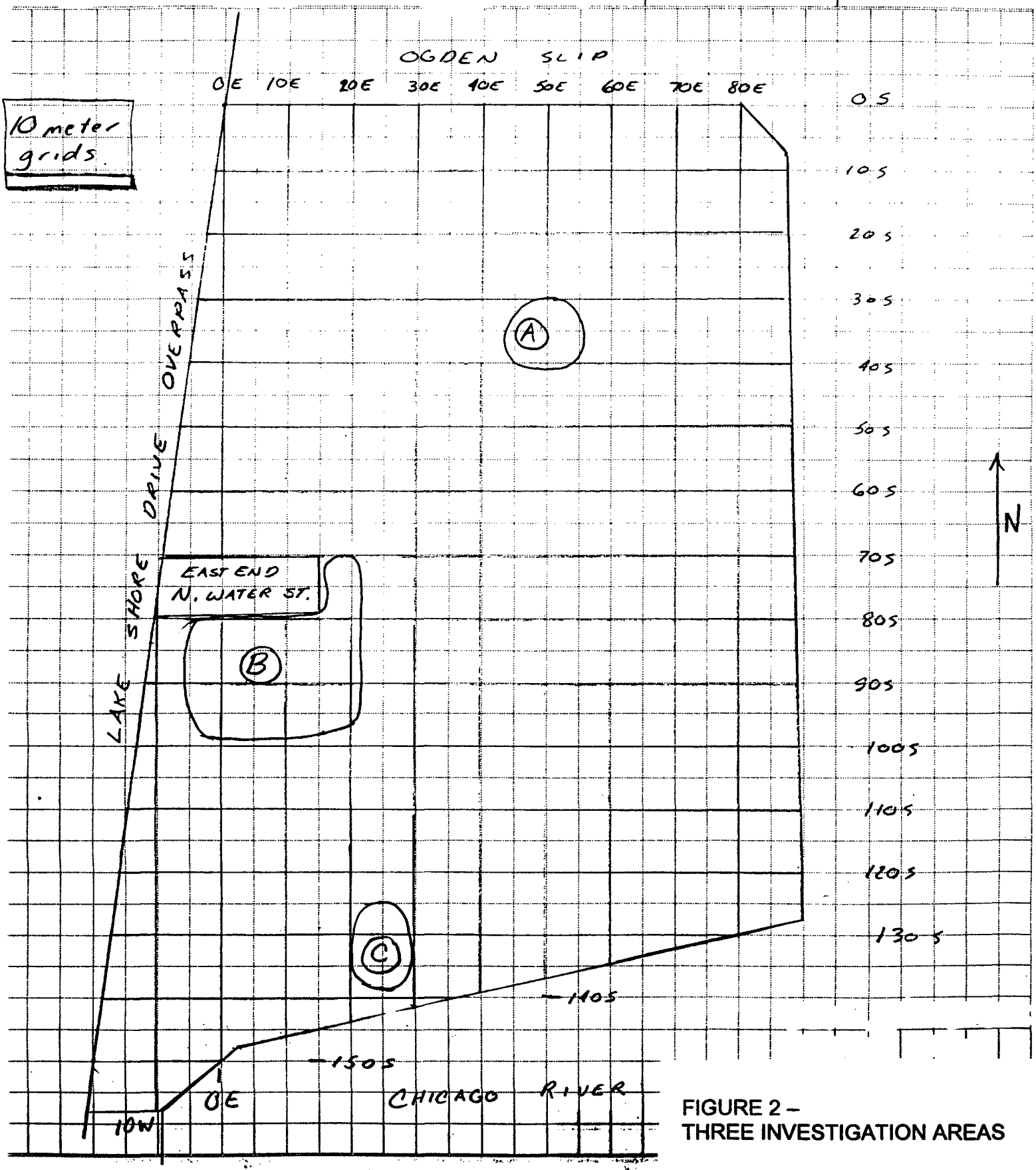

FIGURE 2 –
THREE INVESTIGATION AREAS

ENVIRONMENTAL ACCESS AGREEMENT

1. I (we), the undersigned, do hereby grant to Kerr-McGee Chemical LLC ("Kerr-McGee"), its employees, authorized representatives and contractors; United States Environmental Protection Agency ("U.S. EPA"), its representatives and contractors; license and permission to enter upon owner's property described as:

   Property Address/Location:

   for the purpose of conducting environmental investigation activities. Kerr-McGee is not U.S. EPA's representative with respect to liability associated with the Chicago Streeterville Area Projects.

2. Upon conclusion of the investigation activities, Kerr-McGee shall remove all its equipment, and disturbed areas shall be restored, to the extent practical, to original conditions.

   Dated this _____ day of _____, 2001.

Owner(s):

Phone# _____

_____

_____

_____

File: DPCH-

Surface Gamma Survey

1. PURPOSE

This procedure provides protocols for surface gamma radiological surveys for site characterization.

2. SCOPE

Radiological surveys will be performed at the designated Site as part of the Site characterization.

3. REFERENCES

3.1 REF Facility Procedure - SOP-WCP 376 "Portable Survey Instrument Operability Checks"

3.2 REF Facility Procedure - SOP-WCP 379 "Calibration of the Ludlum Scaler Ratemeter Model 2221."

4. EQUIPMENT AND MATERIALS

The following equipment may be used as part of the survey programs. Other equipment may be substituted if necessary because of availability of the items listed or the conditions encountered at the site.

4.1 Trimble Pro XR GPS unit with a datalogger to record the location of each surface gamma survey point.

4.2 2-inch by 2-inch NaI (T1) gamma detector.

4.3 Ludlum Model 2221 portable scaler ratemeter analyzer.

4.4 Weedwacker.

5. INSTRUCTIONS FOR RADIOLOGICAL SURVEY

5.1 Navigate to EPA anomaly areas using GPS unit.

5.2 Clear brush for gamma survey walkover survey.

5.3 Locate point of highest surface gamma reading in each of the three anomaly areas.

5.4 The Ludlum ratemeter is set for 2-second time-weighted average count rate.

5.5 Hold the survey meter probe parallel to the ground surface at a height of approximately two to six inches.

5.6 Walk along grid lines at a maximum speed of about 0.5 meters per second (1 mile per hour).

5.7 Continue surveying for a minimum ten-meter radius around the highest reading in each area

6. RECORDS/REPORTS/NOTIFICATIONS

The following documents will be maintained as quality records:

- Field Logbooks
- Map of gamma survey locations

Downhole Gamma Logging

1. PURPOSE

This procedure provides protocols for downhole gamma logging for site characterization activities.

2. SCOPE

Downhole gamma logging will be used primarily to quantify presence of, if any, low-level 11(e)(2) byproduct material present in concentrations exceeding the criteria defined in the U.S. EPA Unilateral Administrative Order (UAO) for the Lindsay Light II Site. The gamma probe is lowered into the test hole and measurements are recorded in six-inch increments.

3. REFERENCES

3.1 Gamma Radiological Survey SOP,

3.2 REF Facility Procedure - SOP-WCP 345 "Surveys of Surface Contamination and Release of Equipment For Unrestricted Use"

3.3 REF Facility Procedure - SOP-WCP 347 "Decontamination"

3.4 REF Facility Procedure - SOP-WCP 376 "Portable Survey Instrument Operability Checks"

3.5 REF Facility Procedure - SOP-WCP 379 "Calibration of the Ludlum Scaler Ratemeter Model 2221."

4. REQUIREMENTS

4.1 The Health Physics (HP) Supervisor shall ensure that all HP or other approved technicians who will be performing the health physics duties in accordance with this procedure have been trained and understand their role and responsibilities.

4.2 HP or other technicians approved by the HP Supervisor shall ensure that all portable survey equipment used in accordance with this plan is properly functioning and has valid calibration and daily source check stickers. Portable survey equipment shall be source checked daily in accordance with REF Facility Procedure – SOP-WCP 376. The observed counts per minute value corresponding to 7.1 pCi/g for the Ludlum 2221 Ratemeter must be recorded in the appropriate blank on the Borehole Field Log sheet.

5. DELINEATION DRILLING METHODS

5.1 Responsibility

The Offsites Manager or designee is responsible for implementing this activity. The Offsites Manager will appoint a Field Investigation Leader to supervise field activities, maintain records and otherwise conduct QC duties as described in this procedure.

5.2 Equipment, Materials and Tools

5.2.1 Manual equipment to advance test holes.

5.2.2 Trimble Pro-XR GPS unit to locate each test hole.

5.2.3 Ludlum 2221 Digital Ratemeter with a model 44-62 0.5" x 0.5" thallium-activated sodium iodide [NaI(Tl)] scintillator to perform test hole gamma logging.

5.3 Drilling and Gamma Logging Procedures

5.3.1 Utilities will be located prior to performing any ground intrusive activity on a property. The Field Investigation Leader will be responsible for originating a request for a DIGGER Utility Locate for the Site. The phone number for DIGGER is 1-312-744-7000.

5.3.2 Each test hole will be located using the Trimble Pro-XR GPS unit to navigate to the point of the highest surface gamma reading located during the surface gamma survey.

5.3.3 A hollow 2"-diameter O.D. drill pipe will be advanced into the ground by manual means to a depth of 24 inches (2 feet) below grade surface. This depth may be extended, if required, as outlined in Paragraph 5.3.6.

5.3.4 A HP or other technician approved by the HP Supervisor will lower the model 44-62 probe into the geoprobe to a depth three-inches below grade surface. At depth, the gamma rate will be recorded following a one-minute counting time. The model 44-62 probe will then lowered to the bottom of the drill pipe in six-inch increments and the gamma rate will be recorded following a one-minute counting time at each six-inch increment. Data will be recorded on the "Borehole Field Log Sheet" provided in this procedure.

5.3.5 If downhole gamma logging results for the boring in the center of each anomaly indicate that 11(e)(2) byproduct material may be

present in concentrations exceeding 7.1 pCi/g, additional test holes may be stepped-out in subsequent five-meter increments until results indicate concentrations are less than the criteria for the full vertical extent of the test hole.

5.3.6 During test hole gamma logging, if the bottom two gamma measurements indicate the presence of 11(e)(2) byproduct material at concentrations exceeding 7.1 pCi/g, the test hole will be further advanced to achieve two or more successive six-inch increment readings below the criteria or until refusal. The field logs will include an explanation of the refusal or other pertinent comments if any readings in the bottom 12" exceed the criteria.

5.3.7 The HP Supervisor or his designee is responsible for reviewing the gamma logs for completeness and data inconsistencies in a timely manner. The Field Investigation Leader is responsible for collecting the reviewed gamma logs from the HP Supervisor.

5.3.8 Physical obstructions (i.e. tree, rock, or topography) may prevent test holes from being located at the necessary measured location or from being extended to the minimum required depth of 24-inches. If this occurs, an alternate location should be used that is as close to the preferred location as reasonable and practical.

5.4 Physical Survey and Mapping

The physical location of every test hole will be recorded using the GPS unit. The location of completed test holes will be shown on field maps prepared by the Field Investigation Leader.

The Field Investigation Leader is responsible for comparing the map of completed field test holes to the surface gamma survey and gamma log data to ensure that the test holes cover the study area in accordance with this plan.

6. RECORDS/REPORTS/NOTIFICATIONS

The following documents will be maintained as quality records:

- Field Logbooks
- Test hole gamma logging sheets
- Map of test hole locations

BOREHOLE FIELD LOG

Page _____ of _____

Date: ____________ Time: ____________ **Field Technician Name:** ____________

Property: ____________ **Property Parcel ID No.:** ____________

Instrument Model/Serial Number: 2221/ ____________ Probe Model/Serial No.: 44-62/ ____________

Response Check: Before ____________ (cpm)

Hole #:		Hole #:		Hole #:		Hole #:	
East:		East:		East:		East:	
North:		North:		North:		North:	
Elev.:		Elev.:		Elev.:		Elev.:	
____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g	
Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe	

Depth	Counts (cpm)	Depth	Counts (cpm)	Depth	Counts (cpm)	Depth	Counts (cpm)
6"		6"		6"		6"	
12"		12"		12"		12"	
18"		18"		18"		18"	
24"		24"		24"		24"	
30"		30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

Hole #:		Hole #:		Hole #:		Hole #:	
East:		East:		East:		East:	
North:		North:		North:		North:	
Elev.:		Elev.:		Elev.:		Elev.:	
____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g		____ cpm = 7.2 pCi/g	
Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe		Type: 2" Geoprobe Pipe	

Depth	Counts (cpm)	Depth	Counts (cpm)	Depth	Counts (cpm)	Depth	Counts (cpm)
6"		6"		6"		6"	
12"		12"		12"		12"	
18"		18"		18"		18"	
24"		24"		24"		24"	
30"		30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	